

WHAT IS CLAIMED IS:

1. An electronic camera, comprising:

an imaging device which images a subject so as to acquire image data with an imaging luminance range wider than a reproducing luminance range on at least one of displaying and printing; and

a recording device which converts the image data acquired by the imaging device with a predetermined function and records the converted image data and information on the predetermined function.

2. The electronic camera as set forth in claim 1, wherein the imaging luminance range is at least two and at most six times as wide as the reproducing luminance range.

3. The electronic camera as set forth in claim 1, wherein the imaging device images the subject with an exposure value that is lower than a normal exposure value for desired reproducing.

4. The electronic camera as set forth in claim 1, wherein the recording device represents a relationship between the image data and a digital value to be recorded by a linear function and records at least a first-order coefficient of the linear function with the image data.

5. The electronic camera as set forth in claim 4, wherein the recording device records the first-order coefficient as attached information for the image data in the same image file as the image data.

6. The electronic camera as set forth in claim 5, wherein the recording

device records the image file in one of a directory and a holder provided for each form of conversion.

7. The electronic camera as set forth in claim 1, wherein the recording device represents a relationship between the image data and a digital value to be recorded by a logarithmic function and records at least one of a base, a first-order coefficient and a zero-order coefficient of the logarithmic function with the image data.

8. The electronic camera as set forth in claim 7, wherein the recording device records the at least one of the base, the first-order coefficient and the zero-order coefficient as attached information for the image data in the same image file as the image data.

9. The electronic camera as set forth in claim 8, wherein the recording device records the image file in one of a directory and a holder provided for each form of conversion.

10. The electronic camera as set forth in claim 1, wherein the recording device represents a relationship between the image data and a digital value to be recorded while dividing the relationship into an area where the relationship is represented by a logarithmic function and an area where the relationship is represented by a linear function, and records at least one of a base, a first-order coefficient and a zero-order coefficient of the logarithmic function and a first-order coefficient of the linear function with the image data.

11. The electronic camera as set forth in claim 10, wherein the recording device records the at least one of the base, the first-order coefficient and the

zero-order coefficient of the logarithmic function and the first-order coefficient of the linear function as attached information for the image data in the same image file as the image data.

12. The electronic camera as set forth in claim 11, wherein the recording device records the image file in one of a directory and a holder provided for each form of conversion.

13. The electronic camera as set forth in claim 1, wherein the recording device converts output voltage values from photoelectric converting devices with a filter arrangement of R, G, B and G of a CCD into digital values and records the digital values.

14. The electronic camera as set forth in claim 1, wherein the recording device records the image file in one of a directory and a holder provided for each form of conversion.

15. The electronic camera as set forth in claim 1, further comprising a mode switching device which switches between a normal imaging mode in which the subject is imaged with the same luminance range as the reproducing luminance range and a wide luminance range imaging mode in which the subject is imaged with the imaging luminance range that is wider than the reproducing luminance range.

16. The electronic camera as set forth in claim 15, wherein:

- the subject is imaged with a normal exposure value obtained from normal photometry in the normal imaging mode; and
- the subject is imaged with an exposure value lower than the normal

exposure value, the exposure value being calculated according to the normal exposure value obtained by the normal photometry.

17. The electronic camera as set forth in claim 1, wherein the recording device records the image data with the same luminance range as the reproducing luminance range and records the image data with the imaging luminance range that is wider than the reproducing luminance range at one time.

18. The electronic camera as set forth in claim 17, wherein:

the imaging device images the subject with an exposure value of a case in which the subject is imaged with the imaging luminance range that is wider than the reproducing luminance range; and

the recording device converts the image data acquired by the imaging device with the exposure value so that the luminance range of the image data is the same as the reproducing luminance range.

19. An image reproducing apparatus which reproduces a visible image by at least one of displaying and printing according to first image data recorded with a recording luminance range wider than a reproducing luminance range on the at least one of displaying and printing, the image reproducing apparatus comprising:

a reading device which reads the first image data with the recording luminance range and reads luminance range information relating at least the recording luminance range;

a signal processing device which produces, from the first image data with the recording luminance range, second image data with a luminance range required on the reproducing according to the luminance range information; and

a reproducing device comprising at least one of:

a displaying device which displays the second image data as the visible image; and

a printer which prints the second image data as the visible image.

20. The image reproducing apparatus as set forth in claim 19, wherein the signal processing device comprises a density adjusting device which adjusts density of the visible image at least one of automatically and manually.

21. The image reproducing apparatus as set forth in claim 20, wherein the density adjusting device adjusts the first image data into the second image data, the first image data being recorded with an exposure value that is lower than a normal exposure value for desired reproducing, the second image data being with the normal exposure value.

22. The image reproducing apparatus as set forth in claim 20, wherein the density adjusting device adjusts the density of the visible image within a range of $\pm 2.5EV$.

23. The image reproducing apparatus as set forth in claim 22, wherein the density adjusting device adjusts the first image data into the second image data, the first image data being recorded with an exposure value that is lower than a normal exposure value for desired reproducing, the second image data being with the normal exposure value.

24. The image reproducing apparatus as set forth in claim 19, wherein:

a relationship between an imaged data and the first image data is represented by a linear function; and

the luminance range information includes at least a first-order coefficient

of the linear function.

25. The image reproducing apparatus as set forth in claim 19, wherein:
 - a relationship between an imaged data and the first image data is represented by a logarithmic function; and
 - the luminance range information includes at least one of a base, a first-order coefficient and a zero-order coefficient of the logarithmic function.
26. The image reproducing apparatus as set forth in claim 19, wherein:
 - a relationship between an imaged data and the first image data is represented while being divided into an area where the relationship is represented by a logarithmic function and an area where the relationship is represented by a linear function; and
 - the luminance range information includes at least one of a base, a first-order coefficient and a zero-order coefficient of the logarithmic function and a first-order coefficient of the linear function.
27. The image reproducing apparatus as set forth in claim 19, wherein the luminance range information is recorded as attached information for the first image data in the same image file as the first image data.
28. The image reproducing apparatus as set forth in claim 27, wherein the image file is recorded in one of a directory and a holder provided for each form of conversion.
29. The image reproducing apparatus as set forth in claim 19, wherein output voltage values from photoelectric converting devices with a filter arrangement of R, G, B and G of an imaging device is recorded as the first image data.

30. The image reproducing apparatus as set forth in claim 19, wherein the reading device reads, along with the first image data, an imaged data recorded with the same luminance range as the reproducing luminance range.

31. An electronic image recording and reproducing system, comprising:

- an imaging device which images a subject so as to acquire imaged data with a recording luminance range wider than a reproducing luminance range on at least one of displaying and printing;
- a recording device which converts the imaged data acquired by the imaging device with a predetermined function into a first image data and records the first image data and luminance range information relating at least the predetermined function;
- a reading device which reads the first image data with the recording luminance range and reads the luminance range information;
- a signal processing device which produces, from the first image data with the recording luminance range, second image data with a luminance range required on the reproducing according to the luminance range information; and
- a reproducing device comprising at least one of:
 - a displaying device which displays the second image data as the visible image; and
 - a printer which prints the second image data as the visible image.